

A New Recessive Hair Mutation on Chromosome 9

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Mutation (allele) symbol: *thnh*

Mutation (allele) name: thin hair

Strain of origin: NOD/ShiLtJ

Current strain name: NOD.Cg-*H2^b* *thnh*/J

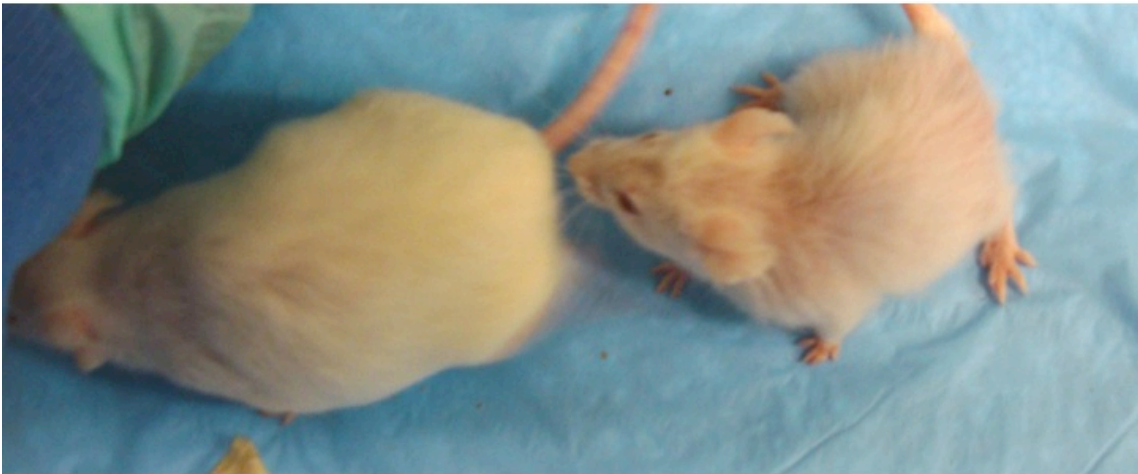
Stock #006935 (jaxmice.jax.org)

Phenotype categories: hair and skin

Origin and description

A new mutation that causes mice to have a sparse coat has been discovered in a production colony of NOD/ShiLtJ (Stock #001976) mice at the Jackson Laboratory, and has been mapped to Chromosome 9.

At two weeks of age, mice homozygous for this recessive mutation are recognized by sparse hair growth. The colony is maintained by mating homozygous mutant mice to +/+ mice of strain NOD.B10Sn-*H2^b*/J (Stock# 002591), a diabetes-resistant strain, and then intercrossing the heterozygous progeny.



A mouse homozygous for the thin hair mutation is shown on the right and an unaffected littermate control is shown on the left. Both at 4.5 weeks of age.

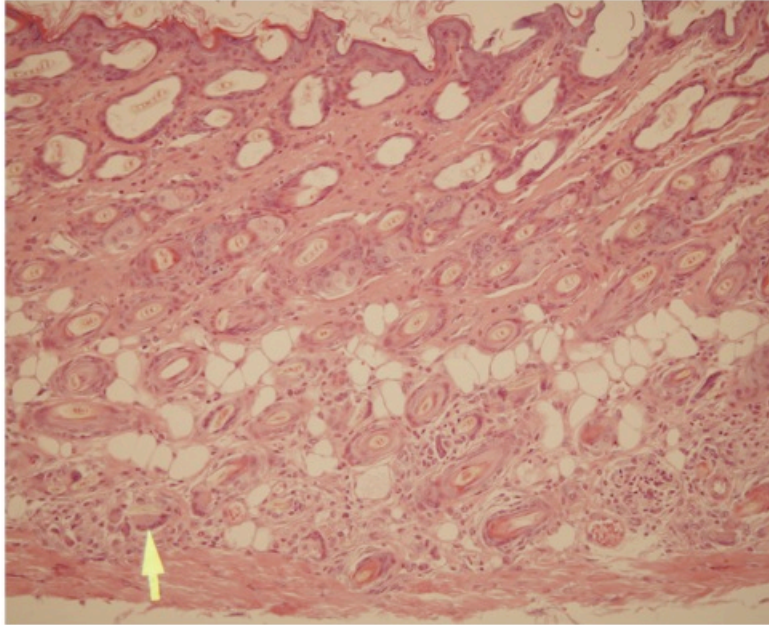
Genetic Analysis

Using our standard mapping protocol NOD.Cg-*H2^b* *thnh*/J homozygous mutant mice were mated to CAST/EiJ mice. The F1 progeny from these matings were then intercrossed and 21 affected F2's were used for linkage analysis. This mutation was mapped distal to *D9Mit111* (86.4 Mb) and proximal to *D9Mit36* (100.3Mb). A search of

MGI did not indicate any obvious gene candidates in this region, and no mutations with similar phenotype have been mapped to this region.

Pathology

A pathological screen of one homozygous mouse was performed at 4 weeks of age. The results indicate follicles in the skin are somewhat dilated, and the deepest portions of anagen hair follicles in the subcutaneous adipose layer are degenerating. Pieces of hair from broken down follicles are free in the connective tissue and appear to induce a severe foreign body granulomatous inflammation within giant cells.



Skin from a 4 week old *thnh/thnh* mouse. The superficial aspects of hair follicles are dilated. The deep dermis is infiltrated by inflammatory cells. Foreign body giant cells are observed (arrow). H&E x40.

A pelt pad and hair sample were taken from a homozygous mouse at 3 weeks of age. The results showed crowded follicles and inflammation of the skin. Analysis of the hair, from a mutant and a control revealed all 4 hair types, but fewer zigzags are present in the mutant than in the control.

The eyes of three homozygous mutants at 5 weeks of age were examined by ophthalmoscopy and electroretinogram tests (ERG), which revealed no gross abnormalities.

Acknowledgements

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